

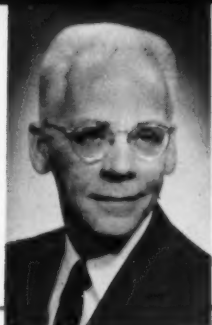
Manage

OCTOBER, 1961



- ▶ *Story of a successful partnership*
- ▶ *Planning a cost-cutting program*
- ▶ *The Engineering Supervisor*
- ▶ *Managers Must Understand Science*

5 dollars / year



... from the NMA president

Report to the Membership

L. FRED MAGRUDER

The ability of people to work together as a group has been essential to the growth of our industrial might. The team exerts a leverage upon human effort that enables us to do things far beyond the capacity of any of us working alone. In all likelihood, as our technology advances, we will become more and more dependent upon large organizations. Because we are faced with problems that are more complex, there is increasing danger that the importance and significance of the individual will be minimized.

As this trend continues, it can become a major management problem. Despite changing conditions, we must preserve the individual incentive and opportunity that is also vital to progress. If we do not, we can lose the dynamic thrust of our industrial economy.

Our progress in the past has come about because we have given the widest possible scope to individual achievement. We live in a country where the individual is encouraged to do his best. Group effort does not suffer because, in the final analysis, group effort is measured by totalling the achievements of the individuals.

Growth or progress comes from people who have imagination and initiative and who are not satisfied with existing concepts or ways of doing things. Permitting the norm of the group to become the standard, discourages the individual from striving for anything greater.

It takes an individual to blaze a trail into the unknown. Our problem is to keep alive the powerful stimulant of individual thought at all levels and in all areas of endeavor. We can't afford to displace the man who has ideas and still expect to maintain a growing economy.

Manage



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OUR COVER

Against a background of Pitney-Bowes postage-meter stamps around the world, Board Chairman Walter H. Wheeler, Jr., left, and President Harry M. Nordberg examine the company's first desk-top electric postage meter mailing machine and its optional automatic feeder which were introduced in the spring. Turn to page 34 for the Pitney-Bowes story.

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CIRCULATION THIS ISSUE: OVER 70,000, DOMESTIC AND FOREIGN.

Some characteristics of successful managers do stand out. How do you compare against these ten points?

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Are You Executive Material?
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by Henry N. Ferguson

American business is growing at a breath-taking pace. In 1900 the horseless carriage was a novelty. Today there are 50,000,000 cars on the road. In 1900 there were fewer than 2,000,000 telephones in use. Today there are some 55,000,000, with an additional 2,000,000 phones being installed each year.

As the size of factories and offices increases by leaps and bounds, the need for executives to manage these enterprises becomes more urgent—and more rewarding.

America needs new executives desperately. But such men aren't "born." Rather, most executives are self-made. Whether they're foremen or department managers—whether they wear a fine suit or sturdy work clothes—the one thing they have in common is a set of executive characteristics.

Listed below in question form are some of the attributes necessary to the make-up of an executive. You can test your own qualifications by answering each question truthfully,

scoring 10 points for each "yes" and five points for each "half-yes." If your score is below 65, the best thing you can do is dig in, then try the test again in six months. If improvement is really your goal, you'll be surprised how much your executive attitude can change in this short period of time.

Do you really know your job?

You can progress to a better one only after you're proficient at the job you have right now, for past performance is what any potential executive is judged by. To do a good job, you must not only know how to do it, but why your job is important—and how it fits into the general scheme of the organization. The sudden illness of a file clerk can create a bottleneck that affects a company's entire operation. Knowing your job contributes to the company's success will make the job seem more worthwhile, and help you do it better.

Do you look for better methods?

One of the most important functions of an executive is to figure out more efficient ways of doing things. Do you look for ideas that will save the company money, help produce a better product, or speed production? Good ideas are the foundation of progress.

Do you seek out responsibility?

The main responsibility of any company executive is to help the company make a profit through service. Sometimes, accepting that responsibility may not be pleasant. But to be worth his salt, an executive must accept it. He must be willing to supervise others—teach them, correct them, help them do their work better or more easily. To be successful, an executive must have the courage to do what he knows is right—whether his decision proves popular or not.

Are you willing to put in that extra lick?

Any football player can tell you: it's that extra bit of energy—that extra ounce of "drive"—that often means the difference between a touchdown worth six points and a "near-touchdown" worth nothing. The man or woman who slows up the moment he gets a little tired . . . who grabs a break at every opportunity . . . who is completely satisfied when he's done the minimum job possible—such a person is not executive timber. But if you look around for something more to do when your immediate assignment is fulfilled, if you stay with a job when others would let down, you're the kind of person the boys upstairs are

looking for. They have a word for it: guts.

Are you willing to learn?

If there is anyone who knows "all about" anything, he would certainly be a man worth meeting. When someone says he knows "all about" something, he's saying that he has nothing more to learn. But a potential executive must always learn. He must read books and trade magazines, talk with his superiors, take courses—to learn!

Are you a salesman?

I don't mean to ask if you go out and sell goods for your company; you can increase sales by creating goodwill toward the company. Do you "talk up" the company when you're among friends? Or do you join the habitual grippers who are always at odds with their associates—and themselves? A good executive is constructive, optimistic, and seeks to spread good feelings and enthusiasm. This positive approach counts for a lot, for to succeed you must in the long run be able to lead and not have to drive.

Does the clock sneak up on you?

The one who makes progress on his job is the one who becomes absorbed in it. A good way to test yourself is to see

whether the clock seems to stand still near closing time, or whether you're surprised at the end of the day at how time has flown by. If your job doesn't interest you, talk it over with your superior. Maybe there's another job you'd enjoy more and which you could do better.

Do you accept criticism graciously?

We all learn a lot by trial and error. You can progress more rapidly if you accept the suggestions and criticisms of others who know more than you do. No need to be touchy if your work is criticized. Welcome all the suggestions you can get—and offer counter-proposals if you think you know a better way. But when the discussion is over, do it the way the boss wants it done. He probably has reasons—and besides: he foots the bill!

Are you ready to compete?

Right now you are competing—with everyone who would like the same job you're after. To get ahead, you must be better than your competition—more alert, more productive, more interested in advancement. The best way to see if you're getting ahead is to keep a record of your performance. No matter what your job is, keep some sort of record for a

month or a week and check your performance—evaluating quality as well as quantity—like a golf score. After a time you'll find yourself setting goals, competing with yourself to achieve those goals. Once you learn this business of setting a goal—then meeting it—you'll have developed an important executive quality, because you can then help others do the same thing.

Do you share your knowledge?

The old idea that you should keep to yourself information you've learned about the job is not a very sound one. Everyone respects brains, and management knows that someone who offers suggestions to help fellow employees is a good man to have in a key job. The desire and ability to teach others is one of the hallmarks of an executive.



"Frankly I had expected more than a 'yipie' from J. B. when I informed him I was leaving the company."

Everyone is cost conscious these days. Here is how one top executive systematically plans cost reductions.



*by John J. Lee
Executive Vice President
Twin Coach Company*

Most managements are too busy increasing business in boom times to worry about costs. It is generally when volume and profits begin to dip that companies start to look to cost cutting.

It requires effective planning and good judgment to cut costs in a way that will increase profit as well as maintain long term growth potential.

What are the ingredients of a good cost cutting program? First, it roots out fat in the organization that has crept in,

unnoticed, during prosperous times. It recognizes the departments of the company which are well-run and lean, and does not penalize them with "across the board" cuts. It also provides a cost control system for flagging future costs before they get far out of hand.

The overriding principle to follow, when substantial cost cuts are in order, is to search first in areas where major expenditures are found. One must hunt for whales in the ocean, not in a goldfish bowl.

Here is a check list of 10 key areas to investigate for cost cutting:

1. The Cost of Materials—Take a long look at your reports on scrap. Are you ordering materials in the right lengths, so as to eliminate waste? Is there excessive scrap caused by wrong materials, or poor production planning?

2. Inefficient Production Control—If your company has extensive back orders, excessive down time, and poor delivery, chances are your production control department is costing you unnecessary money. Production control is the heart of any manufacturing activity. It is a matter of logistics, getting the right items at the right place at the right time—materials, machines, and manpower.

3. Inventory—The cost of carrying inventory can run as high as 20% annually of the value of goods in inventory. Excessive inventory is caused often by poor sales forecasting and production planning. It also can be caused by unwise speculation in raw materials. With excessive inventories, you not only tie up capital, but run the danger of obsolescence, rehandling, scrappage, as well as

the cost of warehouse space and storage bins.

4. Non-Productive Labor—Studies of manufacturing operations in the electronics field show a rising trend in the overall cost of non-productive labor. These are the employees who have nothing to do with the actual manufacturing of the product—clerical and professional personnel. In the main, there are two reasons why many companies are overstaffed in this category. First, it is sometimes difficult to tell how many people are needed to work in a non-productive department. Standards in this work category are sometimes difficult to establish. Often, these departments tend to be overstaffed. The second factor is that as automation increases, there is a decrease in the number of direct labor personnel needed, but a corresponding increased number of personnel for paper work, and other non-productive chores. A company that has suffered substantial volume decline will tend to have overstaffing in production control, purchasing, and order and billing departments.

5. Indirect Labor—These are the individuals who service direct labor, the people who actually work on the production line. This includes groups

such as materials-handling people, setup men and others. Fat creeps into this category during boom times. When volume increases, companies add a service man or a setup man rather than take a chance at slowing down production. Then when volume declines, these indirect workers stay on, although the volume of work does not justify their presence.

6. Inefficient Maintenance—

Look at your chart for mechanical failures and down time. Why do these failures and breakdowns occur, for how long a period of time, at what frequency, and what locations? Sometimes, by adding a piece of standby equipment, considerable savings can be effected.

In some large companies, improvement in the organization of maintenance departments can result in substantial savings. In one large company an analysis was made of two hundred employees in janitor services such as paint, window and waste disposal, and in yard maintenance. It was discovered that the employees handled tasks by buildings, rather than by job function. Each employee had a number of responsibilities and duties, and was in a position to set up his own work schedule and establish his own work standards.

By centralizing the maintenance function and providing uniform standards of performance, savings close to \$100,000 a year were effected. Under the new system, a formal schedule was made up, designating the frequency of certain duties, such as cleaning, waxing, painting. Routine was spelled out for the crews. Regular inspections were made and records kept of the results.

7. Compensation—When a company is losing money or just breaking even, everyone is making too much money for the job they do. During a period of business downturn, it is wise to investigate the number of \$20,000-a-year men the company has. Executives loyal to a company will not recoil at taking a temporary salary reduction when business is bad.

8. General Accounting and Clerical Procedures—Duplication and unnecessary reports gobble up a good deal of money. See whether reports and forms can be combined, and whether such things as preprinted forms can be used in accounting procedures in place of drawing up monthly accounting classifications. Many of the middle and smaller sized companies do not use in sufficient numbers inexpensive machines such as electric adding machines and calcu-

lators. Properly used, this equipment can produce substantial savings.

9. Design of Products—Many companies are actually giving away their products and don't know it. Compare the materials in your product line with that of your competition. Are you over-designing your product? Are you using materials far in excess of use requirements?

10. Plant Layout and Facilities—Is the space adequate for

the reverse of growth. The company is able to redistribute lesser functions, releasing the least essential personnel. When a company is small, executive Jones acts as both purchasing director and production control manager. As the company grows, Jones adds a material controls manager and a scheduler and a planner, and an analyst. Finally, he adds a full time purchasing director. In general, the last function added is the first to be reduced. With-

It takes more than a good organization for effective cost control program: you have to know the profit components as well.

the production you are conducting? Do you have narrow aisles, poor storage space, which results in inability to use effective materials handling equipment? Are there sufficient storage bins and tote boxes?

The above ten areas for investigation, while important, will not in themselves produce optimum cost reduction unless they are coupled with good cost controls and good organization. When the going is rough and substantial paring of personnel is required, good functional organization is worth its weight in gold. In a well organized company, contraction becomes

out a good functional organization, there is substantial danger of cutting out essential functions of a company.

In addition to a good organization, a cost cutting program requires good cost controls. Management must know what its profit components are. It must know what it is that can be cut, and how it will affect profit, as well as the over-all welfare of the company.

The history of industry is replete with instances of cost cutting programs which failed to boost profits. One cause of failure is poor estimating of the cost of carrying out the

program. Costly new equipment does not always produce savings or economies that are projected. Second, savings from cost cuts are sometimes passed on to the consumer by means of obsolete pricing formulas. Third, savings on lower cost raw materials are sometimes offset by greater costs in processing the materials. Fourth, probably the biggest cause of failure, is the inability of management to look at the broad picture. One company spent a

good deal of money in installing mechanized materials handling facilities. Unfortunately, the vice president who carried out the program had failed to look at the company's union contracts. The dozens of employees who were to be released from their jobs, because of the new machines, subsequently had to be transferred to another department of the company, where they were even less needed than in the old department.



"Now I don't want you to do it my way because I say 'Do it my way.' I want you to do it my way because you see it my way."

A little tact on the part of the supervisor can go a long way toward maintaining good employee relations.

TACT — a necessary ingredient

by Joseph Arkin

"What d'ya mean, see a psychiatrist! Do you think I'm crazy or something?"

This was the terse retort when his supervisor, in a heated argument, suggested to John F. that he seek the services of a psychiatrist.

What brought about this situation was the poor work performance lately of John F., heretofore a better-than-average worker.

Situations like this are not uncommon. The worker may bring his personal problem to work with him. It may be financial worry, worry over a member of his family who is sick, or any one of the thousands of lesser troubles that are apt to make a person feel out of sorts and unable to do as good a job as usual.

This doesn't give him a license to be disagreeable, to take out his gripes on his fellow-workers, nor does it excuse poor work.

But, if he can feel that his supervisor sees him as a human being, not as a module, with his own private life and worries, he will be able to maintain a proper perspective.

When a worker comes in with a chip on his shoulder because the neighbors kept him up late with a loud party—and then told him off when he complained about the noise, it's very easy for him to transfer his frustrated anger to the foreman or to some nearby worker.

On the other hand, if the people he works with realize he's had a rough night and let him know, by either words or

deeds, that they sympathize with him, he is going to be mad only with his neighbors, not with the whole world.

This is the crux of the problem. The foreman must recognize that like himself, his crew faces the problems of life—he should not take their gruffness personally—and thus he will help to maintain good relations in the working group.

Every foreman and supervisor knows that there are workers who are problems. These special situations are those where special handling is called for. There are the workers whom nobody can seem to handle properly, chronic absentees, men who stir up trouble with other fellows in the shop.

Selected studies have shown that more people are discharged from their jobs for social, rather than for occupational incompetence. In other words, it wasn't that they couldn't do the work, but that they just couldn't get along with their fellow workers.

Others lose their jobs because they were always having accidents, were out sick too often, rather than because of poor workmanship.

What can the foreman or supervisor do in such a case if the usual disciplinary and other measures do not seem to

work? He knows the man has a family to support, so he tries to overlook some things, or tries to talk to the man like a "Dutch Uncle" and give him some good advice. With many individual problems this just makes things worse, and the point is reached where the man must be discharged if orderliness is to prevail in the shop.

There is a moral here. If a man tells you that he has a severe pain in his abdomen, you don't try to treat it. You suggest that he go to see his family physician, visit your plant dispensary, or otherwise get medical help. In the same fashion—you are not a psychiatrist and you haven't had the proper training to treat people with emotional problems.

Trying to be an amateur psychiatrist can be very dangerous. You can get hurt yourself and you can hurt the person you are trying to help, in addition to doing harm to his family.

The best thing is to refer such a person to someone who is professionally equipped to help him. If yours is a large plant, there is probably an employee counselor who knows about the resources available in your community—mental hygiene clinics, family agencies, etc., where arrangements can be made for professional help.

Some plants have staff physicians, even psychiatrists. But if your plant doesn't have either it is best that you suggest to the employee that he see his family doctor. He will best know how to handle the situation or make arrangements for specialized care.

Here is the rub. The business of referring an emotionally disturbed person for special treatment may sound like a simple procedure, but it is probably the most difficult in employer-employee relations.

It takes a lot of tact and understanding. You just don't go up to a man and say: "John, the way you're acting around here, nobody can live with you. I think you ought to see a psychiatrist. Better go see the employee counselor about it."

Joe might give you a punch in the nose, and there are those who might agree with him that you had it coming. He certainly won't take your advice, and even if he did, he would approach it with a chip on his shoulder. It would only make it harder for the physician to help him.

Again, what is important. The referral for psychiatric treatment is not to be used as a weapon when one of your men is being a little too irritating. You don't *accuse* someone of having a cold and certainly

you don't *accuse* anyone of having emotional problems.

Mutual respect and understanding is perhaps the best basis for setting the stage for the referral of a person for psychiatric help. Each of us is a human being trying to get along as best we know how. The other fellow has feelings too. So, when trying to tell someone to seek treatment, put yourself in his shoes. How would you want to be told? How would you want to be approached on such a subject?

What would be most likely to convince you that your boss was really interested in you as a person, and that it might be a good idea to see your doctor?

Much of this is made easier if you have established a good personal relationship with the people working under you. You know them, they know you, you respect one another, they feel free to talk fairly openly with you about things that trouble them.

When the problem seems to be one that the man can't find his own answer for, you can suggest in a tactful way, kindly and with compassion, that he might want to talk to an expert who can give him help. It is as simple as that.

What about the chronic drinker? American industry is faced with the fact that indus-

trial wage losses due to absenteeism caused by alcoholism are estimated at \$432 million a year. On the average, 3% of the work force are problem drinkers.

There are 5,000,000 alcoholics in the United States today, according to the National Council on Alcoholism. The disease, and it is recognized by medical science to be just that, costs the nation an estimated billion dollars a year. It goes to pay for hospital, prison, and welfare expense . . . the loss to industry . . . the accidents caused by alcoholism.

The problem drinker himself loses an estimated 22 days of work every year because of alcoholism, and two days more than average because of sickness.

According to studies made by Yale University, he has twice as many accidents, and shortens his life span by some 12 years.

Here again tact is needed. You don't help an alcoholic by nagging, scolding, lecturing, moralizing, or making empty threats. But getting an alcoholic to professional assistance can be an important step toward his recovery.

One way the foreman can help is to learn what he can about the disease of alcoholism. He should be able to detect the early signs of the alcoholic—

this will enable the foreman to guide the problem drinker and be able to guide him in seeking help.

Information, unbiased and unexaggerated is available free of charge from the National Council on Alcoholism, 2 East 103rd Street, New York 29, N. Y. More help can be secured by contacting the local chapter of Alcoholics Anonymous. The nearest chapter can be located by checking your local telephone directory.

Foremen and supervisors must realize that a good worker is a mentally healthy worker. People who are mentally healthy feel comfortable about themselves. They neither underestimate nor overestimate their abilities, and can accept their own shortcomings.

These self-poised, confident people feel able to deal with most situations. They are not readily bowled over by disappointments, or by their uncontrolled emotions. Usually they have more self-respect than others and have more respect for others.

The mentally healthy person is able to establish personal relations that are lasting and satisfying, and is able to be a productive member of the group.

The foreman or supervisor, because of his position in in-

dustry, is a key person in promoting mental health. Psychiatrists and mental health experts have long recognized that the mental health of a person depends to a great extent on how he gets along in the work situation. If things are right, he gets a sense of personal well-being and satisfaction out of his job. He feels that he belongs . . . that he has a place.

The foreman or supervisor has an important part to play in seeing that things go well and in providing a healthy environment at work.

By his attitude, by the way he conducts himself and deals with the men on the job, he

determines whether the work group is going to be a smooth-running and harmonious unit all pulling together.

Is your appetite whetted for knowing more about this? Low cost pamphlets are available—Emotional First Aid on the Job, Harry Levinson, Ph.D., 10 cents. National Association for Mental Health, 10 Columbus Circle, New York 19, N. Y. Mental Health in Industrial Relations, Robt. L. Sutherland, Hogg Foundation for Mental Health, University of Texas, Austin, Texas, 5 cents. How to Live with Job Pressure, free, National Institute of Mental Health, Bethesda 14, Maryland.



"We don't mean that you should do nothing but think, Steward. We expect you to do some work, too."

**Audio-visual systems developed by
Hughes Aircraft have great variety of applications**

VIDEOSONIC

VIDEOSONIC, a trademark of the Hughes Aircraft Company, used to label a versatile, audio-visual system that aids assembly, inspection, testing, and training, is proving its worth at six of the company's plants.

Several years ago Hughes was faced with a growing manufacturing problem of building more reliability in electronics systems that were becoming more and more miniaturized. Girls assembling sub-systems and black boxes which were part of airborne armament control systems and air-to-air guided missiles, used written instructions and engineering blueprints to guide them in their work.

But this method was vulnerable to misinterpretation which meant errors and time-consuming rework, test, and inspection.

A task force assigned to the problem by Hughes manage-

ment discovered that it took a girl 25/100 of a minute to do a specific job, and it required three times as much time to figure out what to do. To reduce instruction time and to improve accuracy, decals of the work to be done were pasted on a printed circuitry. An improvement over the decal was a picture of the work projected directly above the work. Both ideas were improvements, but each system had drawbacks.

The next step was to project a picture of the work directly in front of the assembler. Then sound was added. The combination made it possible to tell the assembler to take a specific wire and connect it to a specific pin while simultaneously watching a picture of that particular operation. No problems were ever presented that did not also provide a solution. The projector with sound tape eliminated hesitation, and hunt and search.

Each VIDEOSONIC unit resembles a portable TV set with its own built-in projection screen. Colored slides are synchronized with a magnetic tape recording to show and tell the assembler exactly what to do, how to do it, and at exactly the right time. Several assembly instructions can be shown on a single slide.

Although automatic, the machine can be manually operated by selective pushbutton controls. A tape foot counter and a side lens for projection on large screens are accessory features. The sound system includes a built-in speaker and earphone jacks for optional listening modes.

Programming is essential to the VIDEOSONIC operation. Careful planning goes into the

production of each tape and slide, leaving no doubt on the assembler's part as to how each operation is to be performed.

To prepare instructions, a team of industrial engineers, quality control specialists, foremen, and bench operators takes a specific assembly apart and goes through all the operations necessary for its completion. Each photo is planned and coordinated with a rough script and a narrator, while watching the slides projected in front of him, records the instructions on tape.

Today more than 1,000 VIDEOSONIC systems are in operation in Hughes facilities at Culver City, El Segundo, Newport Beach, Fullerton, and Los Angeles (all in California) and at Tucson. In addition, several

An article by Thomas A. Dickinson called "Production's Paradoxical Paragon" in the May 1961 issue of MANAGE described audio-visual systems used on Hughes Tucson assembly lines as being developed by Applied Communications Systems of Culver City, California. The fact is, according to a Hughes Aircraft Company vice president, the units installed in the Hughes Tucson facility were developed and manufactured by Hughes. In addition, they were in operation several years before ACS was founded. What's more, the audio-visual systems are being effectively used in a wide variety of interesting applications. This story highlights some of these uses.

other companies have set up assembly lines using the Hughes systems while still others are evaluating them in their own plants.

VIDEOSONIC systems have many applications employed with good results. Here are some used successfully at Hughes:

- New employee orientation—acquainting new employees with company policies, security, group insurance, etc.

- Employee training—teaching job fundamentals and techniques.

- Office systems and procedures—operation of computers, systems analysis, instructions.

- Operation preparation—setup, work area layout, tools and materials.

- Manufacturing—instruc-

tions in fabrication, assembly and processing.

- Inspection—manual, mechanical and instrumental inspection.

- Testing—precise instructions to assure conformance with specifications.

- Instrument calibration—checking instruments in primary and secondary labs.

- Operation procedures—definition of proper procedures on electronic equipment in the plant, in the field or by the customer.

- Maintenance—maintaining plant equipment and facilities.

- Trouble shooting—taking an operator through a complex system to the point of trouble and correction in the shortest possible time.

Statement required by the Act of August 24, 1912, as amended by the Acts of March 3, 1933, and July 2, 1946 (Title 39, United States Code, Section 233) showing the ownership, management, and circulation of **MANAGE** Magazine, published monthly on the 25th at Dayton, Ohio, for October, 1961.

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3. The known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner. S/Eric P. McCarty, Editor.

Sworn to and subscribed before me this 18th day of September, 1961. [SEAL]
S/Jean B. Adams, Notary Public. (My commission expires August 1, 1962)

YOU Can Be Successful

Success is a relative term

by Clarence G. Scholtz



This is not the story of a person who became President of the United States nor president of a large organization such as the American Telephone and Telegraph Company but rather the story of a successful department head in a group of insurance companies. Everyone cannot be President of the United States or even president of a large corporation, but everyone can be successful in their chosen field of endeavor whether it is a business of their own or an important position in some large business organization. Ability to be successful is not confined only to the big publicity post, but is open always to those who hold important yet unknown

and unpublicized positions in the business world.

Such is the story of a man who is about to retire, not from choice but because the rules of the company say everyone regardless of position must retire at the age of 65.

We have known Harold Moore for 34 years, the time he spent in our employ. He rose from auditor to be the head of our payroll audit department whose territory covered six states and handled the securing of millions of dollars for our companies. He became the symbol of accuracy, integrity, stick-to-it-iveness, company loyalty and dependability. He produced so much work as an auditor on his way up the ladder that he

was worth conservatively two if not three normal employees to us; later as department head he coaxed his employees to such intense interest in their work that no other department could come within striking distance of his in productiveness, perfect results, nor in loyalty to the company.

Harold would drive his staff, bawl them out, be very strict, and demand almost the impossible from the staff, yet he possessed something that made everyone like him. Anyone that did not know him would think that by this attitude his employees must actually dislike him however the proof of the pudding was in the eating. Just go into his department and make a disparaging remark about him and you literally took your life in your hands for every employee would automatically jump to his defense and fight for him. He worked often from 7 A.M. until late at night also on holidays, Saturdays, Sunday, for time meant nothing to him just getting results was all important, and get results he surely did.

One day one of his employees decided he had heard enough about getting up a little earlier, come to work a little earlier, push a little harder, work a little later, take a short lunch hour, etc., so he planned to

come in the next morning early and show the boss he could beat him in. The next morning found him crossing the square and entering the building at 6:30 A.M. As he walked down the corridor he chuckled to himself that he at last was going to show up the boss. Approaching the end of the corridor he saw the reflection of light, and he thought some of the cleaning women must have left the light burning. He rounded the corner, and lo and behold, there sat the boss with his desk covered with papers and him working away just like an ordinary clerk. The boss looked up and said: "Hello Jim, what kept you?" No one tried to out-do Harold after that.

Now the philosophy today seems to be to do as little as possible, ask for as much as the traffic will bear, grumble about everything, consider the boss and company spends all their time and resources attempting to put something over on the employees, and in other words adopt the attitude that the world owes one a living, thus why kill yourself doing more than necessary. Would Harold be the success all of us consider him to be if he had followed such logic (if that is the word for it)? Even if he had been only one half of everything we admire him for he still

would be a better man, employee, executive and friend than a great many of today's young men who dream of being the boss. Some of that so-called old-fashioned philosophy might help today to speed that climb up the ladder of success.

Harold retires—we shall miss him—we realize now it is going to take two experienced men to

replace him. How many of today's young business men will leave such a hole to be filled in their employer's staff that it will take two good men to fill the gap when in the future it is their turn to retire, and how many will have the satisfaction of having accomplished the impossible? It can be done as Harold proved it could.



Evolution of a Species:

THE ENGINEERING SUPERVISOR

(With apologies to Aldous Huxley)

by Richard J. Obrochta

Clay Randolph had good reason for not being able to concentrate on Aldous Huxley's *Brave New World*. He just got a promotion. As of tomorrow he was going to be the Engineering Supervisor for his group. More money, new responsibilities, and managerial status. Linda, Clay's wife was sure glad to hear about it. "Wonder if she really was serious about buying that fur stole?" Clay pondered aloud. He slowly rolled over on the divan, his favorite parking spot before dinner, his grip loosened on the book, and Huxley's world crashed to the floor.

Clay could not complain about his engineering career. He received his degree in 1950, had only one job before his present one, and was advanced to senior engineer two years ago. His

new promotion would place him in charge of 10 engineers and three technicians. Whenever his dad argued that engineers, "never had it so good," Clay oftentimes found himself conceding to this viewpoint. On the other hand though, his dad had to concede that this "chip off the old block" had more than his share of engineering imagination. Clay's three patents verified this latter point.

Clay hardly stirred. His subconscious was now busily at work. "What does my raise come to after taxes? . . . Might buy one of those compacts. But where would the four kids fit? . . . Why do they always have to get into Mrs. Johnson's ivy? They should play ball someplace else . . ." He then made that mysterious transition to

slumber and into the arms of Morpheus— or Sigmund Freud — depending on the point of view about such matters.

He found himself on a strange planet. The missile Clay worked on— in "real" life— would eventually land on one not too unlike this planet. He saw several buildings in this strange new world. One bore the sign, "Job Evolution Factory." A man stepped out and greeted Clay.

"Hello, there," the man said. "We've been expecting you."

"Expecting me?" Clay could not mask his surprise.

"Yes, Mr. Randolph. My name is Oswald. I am your official host and will start you on your engineering supervision orientation program."

"My what!" Clay now added astonishment to his curiosity. "I don't need any orientation program, why I . . ."

"—this building," Mr. Oswald interrupted, not showing any sign of emotion except for a tinge of impatience, "is our Job Evolution Factory. Here we produce mutations in engineers' job cells."

"Engineers' job cells? I don't believe I understand, Mr. Oswald."

"Follow me. I'll show you." Oswald's voice was very matter-of-fact.

They entered the building and

Clay immediately took note of the production line that was set up. The line consisted of four stations, marked "A" "B" "C" and "D." Strange looking people were doing strange things to strange cell-like structures.

"You see," Oswald began, "the engineer's job cell is remarkably similar in development to the life cells you earth people have throughout your body. When an engineer arrives on our planet, his cell is 100 per cent technical in substance. He then lives on our planet approximately one year until his job cell has evolved through one complete cycle. If he lasts for one year his cell changes from 100 per cent technical to 75 per cent administrative and only 25 per cent technical." At this point Oswald leaned closely to Clay and confided: "I might add that only the fittest survive." Clay tried to look knowing, but mentally scratched his head.

They stopped at Station A. Oswald pointed to a nearby microscope. "Look at the engineer's job cell on that slide. This is how the cell appears when the engineer is first chosen to be a supervisor or administrator."

Clay squinted into the microscope and observed the cell structure. The cell resembled a pie which was grayish in color.

"You can see that the job cell

is 100 per cent technical, being entirely shaded." Then, Oswald added authoritatively: "Just as we had predicted. Now come with me to Station B and see how his job cell looks after we have planted the first mutation." Clay followed obediently.

They stopped at Station B, Clay adjusted the microscope, and saw that a definite change in the cell had taken place. The pie-like structure was now 75 per cent shaded (technical) and 25 per cent white (administrative). "Please note," Oswald said smugly, "the change which has occurred." Clay was bewildered.

"How long does it take before such a change can be produced?" he asked. "Depends upon the individual, really." Oswald enjoyed his role of authority. "We can usually see this mutation occur in the job cell during the first three months of exposure to Administrative radiation. But, come, let me show you how the cell looks after six months of exposure." Off they went to Station C.

Clay was startled when he peered into the microscope. Another mutation had taken place and the cell was now evenly split: 50 per cent technical and 50 per cent administrative. Without waiting for Oswald's, "I told you so," Clay dashed on to the last station, looked in the

microscope and examined the job cell that had undergone "nine to 12 months" of administrative radiation. Clay gasped. The job cell had completely reversed itself from what it was at Station B and was now 75 per cent administrative and 25 per cent technical.

"I told you so," reminded Oswald who had now caught up to Clay. Clay felt vanquished—and more friendly.

"Look, Ozzie," he started, "this is dreadful. I'd hate to have my job cell change like that in nine to 12 months' time."

"Mr. Randolph, this is only half of the orientation program. Go to our 'Job Simulator Building' next door to see what it actually feels like while this job cell development is taking place."

As "Ozzie" escorted Clay to the entrance of the Job Simulator Building, he voiced a last admonishment. "Remember, Mr. Randolph, only the fittest survive." He then disappeared.

Clay entered the Job Simulator Building and read a sign, "This way to project exhibits." An arrow pointed directly ahead. He stopped at the first exhibit and read another sign, "Simulator I: View of Project by Supervisor. Age three months." Clay walked up to the project, turned a few dials, checked the calculations with

his slide rule, told the attendant that all looked well and then went on his way. He stopped momentarily, looked back at the attendant and wondered where he had seen him before.

"His face sure looks familiar," mused Clay. He gave no further thought to this, however, and went on to the next exhibit.

"Simulator II: View of Project by Supervisor. Age six months," described the second exhibit. Clay again reached for a dial but this time one of the attendants stopped him.

"Here sir, allow me." The attendant then turned the dial for him. Clay was not too certain whether he appreciated this helpful gesture. When he tried to check the calculations, another attendant took out his slide rule and did it for him. Clay could not hide the resentment he felt. What irked him more was the fact that both of the attendants also looked familiar, just like the attendant at Simulator I. As Clay walked away, he quickly flipped a switch on the project, felt proud of himself, and sauntered off to Simulator III: View of Project by Supervisor. Age nine months.

Mr. Obrochta is a personnel engineer with Convair/Astronautics, division of General Dynamics Corporation, San Diego, Calif.

Clay had difficulty seeing the project. Four attendants blocked his view. He asked one of the attendants to turn the dial for him, but the attendant refused.

"Sorry, sir, if you want to see how this operates, I suggest that you read one of our technical reports." He pointed to a stack of reports on a nearby table.

"Thank you. I will."

Clay picked up one of the reports and idly thumbed through it. Actually he was giving more thought to trying to remember where he had seen them before. He slowly walked to the next exhibit. (He didn't read the report.)

Simulator IV: View of Project by Supervisor. Age 12 months, proved to be all enclosed. Presently, an attendant wearing a green jersey marked "Senior Engineer" stepped forward.

"Sir, if you have any questions about the project, just ask me." Clay felt cornered.

"I have no choice, I guess. Go ahead."

Before the attendant could start his report, a very efficient looking girl, wearing horn rimmed glasses, serious-faced, walked up to Clay and presented him with a stack of papers.

"Mr. Randolph," she began, "all of these administrative re-

ports must be attended to immediately before any technical progress report can be heard."

This was too much. Clay balanced all the administrative papers in his arms, walked dazedly toward the exit where another attendant placed a rolled parchment in his hand. When this happened, all the papers fell from his arms and to the floor. Clay breathed heavily and unrolled the parchment:

"The engineer is a species of the science family. He ordinarily possesses superior intelligence, prefers an environment surrounded with things rather than people, and does not usually analyze his or the feelings of others. He is not overly communicative or hyper-active socially. He works best in a technical habitat and may become temporarily confused if called upon to supervise others. This is particularly true if this involves functional isolation from the technical project itself.

"When removed from his technical environment and placed in an administrative one, the engineer is likely to resist his new leadership responsibilities. He will attempt to maintain his former technical behavior and do most of the engineering work himself on the project or projects assigned to him. He soon develops an ad-

ministrative-technical conflict and finds that he cannot continue to do both. This conflict remains as long as he refuses to relinquish his old technical type behavior and adapt to his administrative environment.

"After a period of incubation—if he is to survive at all—the neophyte engineering administrator acknowledges his new status and begins to work through others in his group. He learns—usually very reluctantly—that other members in his group are more directly connected with the engineering projects and sooner or later will possess technical knowledge beyond his. The administrator then relegates himself to such strange tasks as human relations, business administration, psychology, and a few other hitherto unknowns.

"If all job cell mutations are successful, the technical administrator becomes an integrated component in the engineering system. Some members of the species have even been happy doing this type of work.

"Signed, Leader

United State of the Art"

Suddenly Clay heard a tramping of feet. All of the attendants were running toward him. Now he knew them. They were the engineers and technicians in his group. Clay tried running but

one of them caught his arm and started to pull him, and kept pulling.

Clay opened his eyes. Linda was tugging his arm.

"Wake up, dear. Time for dinner."

The doorbell rang.

"Mom," one of the Randolph's children called, "It's Mrs. Johnson." "Jimmy and Donna were playing in her ivy, and . . ."

Clay returned to earth immediately.

One-Day Management Conferences:

Nov. 4, 1961

WESTERN NEW YORK
AREA COUNCIL

University of Buffalo—
Buffalo, N.Y.

R. W. Anderson, Gen. Chr.
Westinghouse Electric

Dec. 2, 1961

DETROIT STEEL CORP.
MANAGEMENT CLUB
Portsmouth High School
Portsmouth, Ohio

Alfred Millard, Gen. Chr.

KOKOMO MANAGEMENT
CLUB

Bon Air Junior High School
Kokomo, Ind.

Howard Cannon, Gen. Chr.
Haynes Stellite

Jan. 27, 1962

CENTRAL OHIO AREA
COUNCIL

M. L. Goeglein, Gen. Chr.
Columbus Auto Parts
Columbus, Ohio

Feb. 3, 1962

ST. LOUIS AREA COUNCIL
Statler Hotel

St. Louis, Mo.

Paul H. Sturman, Gen. Chr.
Monsanto Chemical Co.

Feb. 17, 1962

MICHIANA AREA
COUNCIL

Washington High School
So. Bend, Indiana

C. Van Den Abeele, Gen.
Chr.

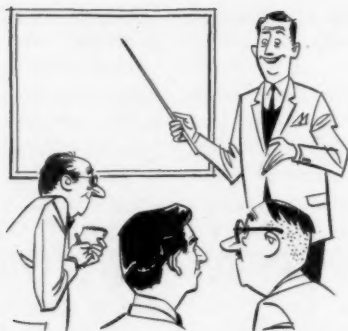
Feb. 24, 1962

AMERICAN AIR FILTER
MANAGEMENT CLUB AND
EAGLE SIGNAL SUPER-
VISORS CLUB

Augustana College
Rock Island, Ill.

Gen. Chr.—Charles King
R. Frink





Many return to the campus to brush up on their specialty, grasp new ideas. Michigan State University is one of several schools offering seminars to help improve management leadership.

School for Executives

Some of the nation's top business executives are "going back to college" at Michigan State University in increasing numbers these days.

They are returning to once-familiar classroom situations for periods ranging from one day to two weeks to participate in a series of executive management seminars offered throughout the year by the M.S.U. Graduate School of Business Administration and the Continuing Education Service.

Although the seminars interrupt busy working schedules, they are no vacations for the executives. The men put in long hours each day and on into the night, studying and discussing technical, professional and other aspects of many types of business enterprises.

And the classes are small. Each seminar is limited in size from 20 to 30 executives, which enables the participants to glean the maximum from the lecture-discussions, and offers

individual consultation if needed.

Dr. Paul E. Smith, assistant dean for continuing education from the M.S.U. College of Business and Public Service, explains that "the seminars are part of Michigan State's plan to bring the business community to the campus, to the mutual benefit of both."

The basic objectives of the seminars, Dr. Smith continues, are threefold: To try to improve the man as an individual; to consider the man in his environment, and to consider his personal relationship with others.

The value of these business seminars is brought into focus very well by a West Coast management consultant, Dr. Robert M. Wald, vice-president of George Fry and Associates. Said Mr. Wald:

"The challenge of the sixties lies not so much with machines, as with men. Management of machines is a skill; management of men, an art."

Noting the fabulous things predicted for business in the coming decade, Dr. Wald said it is more apparent than ever that the price to a company of poor executive leadership may well be the business itself.

He added that even now there are too few men who possess the experience and abilities necessary to be effective manag-

ers, and population statistics indicate that this situation is going to become worse before it gets any better.

The prestige of the total M.S.U. program has been growing, not only in Michigan, but throughout the country. In the past five years, Dr. Smith points out, 254 top business executives have participated in the seminars—112 of whom were from Michigan, and 142 from other states.

There are 10 seminars included in the executive management series, which includes the major areas of business. Typical of these seminars are the following five:

The Purchasing and Materials Management Seminar, which stresses administrative concepts of management and purchasing, emphasizes the executive role and profit potentials. Now in its fifth consecutive year, this two-week seminar explores new ideas and provides a rich interchange of knowledge among participants and staff.

The Sales Management Seminar is designed for managers concerned with field selling operations. Concepts in the psychology of human relations which will aid him in understanding himself and other people are stressed, as is information regarding new developments in the field which will

help to increase proficiency of the sales executive in charge of field sales management.

The Marketing Management Seminar is designed for executives concerned with marketing, planning and administration, and for other executives whose work requires a knowledge of the marketing concept. The objectives of this seminar are to provide marketing executives with new ideas and concepts in decision-making in marketing, to develop the marketing orientation in executives not directly concerned with marketing, and to stimulate interest in innovation and adjustment to changes in the market place.

The Financial Management Seminar stresses recent developments in financial management, with particular emphasis on their use by top management in planning, decision-making and control. Included in the discussions are the implications of the competitive and governmental environment in which business operates, with particular emphasis on the contribution of financial management to successful business operation.

The Retail Management Sem-

inar is designed to provide the top administrator in retailing with new developments which may affect his company and its competitive position. Changing markets and retail methods which influence the profit potential of the firm are also stressed.

Other seminars and conferences in the series include those for packaging material executives, shopping center executives and insurance men, and in the areas of organization management and physical distribution management.

Leading the discussion sessions are speakers and lecturers drawn from the top echelons of business and government, as well as from the business faculty at Michigan State and other colleges and universities.

In the final analysis, executives are exposed to the latest thinking in their various areas of specialty from some of the top business minds in the country. In addition, the men quickly recognize a proven fact of business life—that their future and success lies with people, rather than things; with human relations, rather than technical specialties.

Plastic Producers

The United States produces about half of the world's output of plastic, followed by West Germany, Great Britain, Japan, Italy, France and Canada in that order.

NMA Club Anniversaries

SEPTEMBER

- 5 Years:** C. F. Church Management Club .. Holyoke, Mass.
McCullough Industries Management Club Birmingham, Ala.
RCS Management Club Chicago, Ill.
Lockheed Missiles Management Club Van Nuys, Calif.
- 10 Years:** Buffalo Westinghouse Foremen's Association, Inc. Buffalo, N. Y.
Christy Parks Works Management Club McKeesport, Pa.
General Dynamics Pomona Management Club Pomona, Calif.
Lockheed Management Club of Georgia Marietta, Ga.
- 15 Years:** Steel Age Management Club Corry, Pa.
Buckeye Foremen's Club Findlay, Ohio

OCTOBER

- 5 Years:** The Cobey Town Management Club Bucyrus, Ohio
Magnavox Management Club of Tennessee, Jefferson City Chapter Jefferson City, Tenn.
- 10 Years:** St. Regis Foremen's Club Deferiet, N. Y.
- 15 Years:** Oliver Management Club of Battle Creek, Inc. Battle Creek, Mich.
Worcester Pressed Steel Management Club Worcester, Mass.

The record of drivers between the ages of 18-25 improved during 1960 but they still were involved in nearly 28 per cent of all fatal accidents—twice what their numbers would warrant.



Pitney-Bowes got its start in this frame building in 1920.

PITNEY-BOWES . .

What would it take to elevate a machine shop way down East on Long Island Sound into prominence as the world's largest manufacturer of postage meters? An Idea.

In 1919, an obscure inventor and a manufacturer with imagination developed a revolutionary idea—a postage-printing meter and mailing machine—that was to eliminate the need for licking stamps and create a new industry in America.

How did this machine get its start? That's the fascinating story of Arthur H. Pitney, Chi-

cago inventor, and Walter H. Bowes, president of the Universal Stamping Machine Company of Stamford, Connecticut, makers of post office cancelling machines, and how they pooled a good idea that each had developed independently.

Bowes developed a machine which would print prepaid, pre-cancelled postage. The idea met with favor from Post Office officials, but because the machine would enable people to print their own postage, Bowes had to find a means of protecting Government postal revenue.

Meanwhile, in Chicago, Pitney had developed a postage meter which could be set by the Post Office for the amount of postage to be prepaid by the user, and, when this amount had been used, the meter would automatically "lock out." Post Office approval was withheld because the machine lacked certain mechanical perfections and significant Post Office benefit.

At the suggestion of Post Office authorities, Pitney and Bowes got together to pool

their knowledge. They met, struggled with the new idea, and finally came up with a machine and meter that would print postage directly on envelopes. This time it won Post Office approval in 1920. A milestone in American industry was marked with the formation of the Pitney-Bowes Postage Meter Company, forerunner of the present Pitney-Bowes, Inc. Later the same year, the first metered mail was dispatched through the Stamford Post Office.

■ ■ ■ ■ ■ *and how it grew*

On assembly lines that are color-coded to facilitate the distribution of parts and sub-assemblies, electric postage-meter machines near completion



This new undertaking took courage. There was risk involved—risk of all the time, effort, material, reputation, and hard-earned dollars that backed the struggling business. However, Pitney, Bowes, and the entire organization had a pioneering spirit.

They needed it, for the company was burdened with troubles in its first 10 years. Financial difficulties and postal regulations that almost deprived metered mail of its natural advantages over permit and adhesive stamped mail plagued the company during the 20's. Only a vigorous defense of the postage meter's advantages averted disaster. Fortunately, the postage meter had as one of its chief defenders, Walter H. Wheeler, Jr., then general manager, later president, and now chairman of the board. He helped demonstrate and win approval from the Post Office for the first meter.

Like so many other dramatic moments in the history of business, the importance of the postage meter was not fully recognized while the initial events were taking place. It was only after the postage meter was generally accepted that the full significance of what transpired in those early years became quite clear. For the assembly of the first postage

meter marked the beginning of a new industry—the fruition of an idea, without precedent, that was to grow and find applications wherever postal systems exist.

Growth . . . that one word, dynamic in its meaning, tells the story of Pitney-Bowes. From a factory consisting of one brick and two old frame buildings in Stamford's South End, the company has grown into an organization of 5,400 employees and more than 150 field offices in the U.S., Canada and the United Kingdom.

From sales of a few thousand dollars per year, Pitney-Bowes has moved steadily forward to where, in this its forty-second year, sales are expected to exceed, \$70,000,000. From a few hundred feet of floor space in 1919, the company has expanded until today its plant and offices cover over 10 acres.

After World War II, a new era of growth began. A new line of postage meters was introduced, and in 1948 the first truly mass-market meter—the Desk Model—was offered to the public. The company also began to diversify its products in the post-war years, adding scales, letter openers and counting, imprinting, folding, inserting, tax-stamping and document-handling machines to its line of mailing equipment.

This progress was in keeping with the words of one officer who said: "We cannot stand still."

Keen insight into the makeup of the company is contained in this quote from **THE STORY OF PITNEY-BOWES** by William Cahn:

"People or organizations move forward or backward; none remain static. There was need for new ideas, new methods, new machines, new people. The selection of Harry Nordberg, president of Pitney-Bowes, to succeed W. R. Greenwood, Sr., opened the way for the testing of some of Nordberg's ideas, such as his emphasis on service, which had its ultimate expression in a so-called 'ninth benefit' added to the "eight benefits" of metered mail.

"The 'ninth benefit' was intangible, but important. Postal authorities admit that the average mailer probably wastes about 10 per cent of the postage and mailing costs, says Paul Roberts, Pitney-Bowes' manager of mailing machine sales. "The reason for this is lack of detailed knowledge of postage regulations. We prepare our salesmen, by formal home study courses and other means, to counsel their prospects and customers, and thus open the way to increased economies and

efficiencies. Our sales people often fill a need that goes far beyond the selling of office equipment. This is what we call our 'ninth benefit.'"

Growth at Pitney-Bowes is international in scope. Again, quoting from **THE STORY OF PITNEY-BOWES**:

"The international division was created," said Walter Wheeler, who himself had helped establish the metered mail system in Great Britain many years before, "to coordinate and expand our foreign business . . . The international division's assignment is to expand our foreign business through the standardization of models, the exchange of manufacture between subsidiaries, and the promotion and coordination of exports—to the end of marketing in each country the products best adapted by design, import restrictions, tariffs, exchange availability and other factors."

But Pitney-Bowes' pride lies not so much in the growth it has attained, nor the rapid strides taken forward in 42 years. It lies in favorable acceptance among customers around the world, earned through sound business methods, quality products, and ever-improving service.

An indication of the respect the Connecticut city, 35 miles

from New York City, holds for Pitney-Bowes and the men who guide its destiny is noted in an editorial appearing in the *Stamford Advocate*:

"When Walter H. Wheeler, Jr., and Harry M. Nordberg became chairman and president of Pitney-Bowes, Inc., respectively, it is of interest to the entire community. This is because Pitney-Bowes is more than an economic unit; it is a socially-conscious institution.

"The service of Pitney-Bowes goes far beyond that of a large employer, purchaser, or taxpayer. At times it seems that our social agencies, hospitals, and private welfare institutions would be unable to function without the aid of the institution at the corner of Walnut and Pacific.

"The (changes in organization) . . . give the assurance that the 'soul' of Pitney-Bowes will continue to influence the community as in the past. Indeed, we wouldn't be surprised to see it grow even larger."

All of the new ideas at Pitney-Bowes have not concerned products—many concerned people. Today, with no union or formal collective bargaining, the company is widely recognized for its unique employee-management relations. Much of its success in this area can perhaps be credited to a thor-

ough system of two-way communications between employees and management. Backbone of the communications structure is an employer-employee council whose members jointly consider employee and management questions, exchange information, and resolve the problems of a growing company through open discussion.

Still other two-way communications between worker and management are question-and-answer boxes throughout the plant; attitude surveys that give the employee the opportunity to "sound-off" about the company; plant tours; newsletters; public address system, and products exhibit.

Pitney-Bowes believes in face-to-face conferences between employees and top management. This is accomplished through "jobholder" meetings, patterned after annual stockholder meetings. At these conferences, employees get a firsthand report on the status of their company and have the opportunity to question management on problems of sales, production costs, wages, etc.

With the same spirit of '19, the men who have lifted Pitney-Bowes to the top in the industry are looking forward to still greater growth, with all its potential, in the future.

Statistics reveal that there is a good time and a bad time to mail. This short article also points out who makes greatest use of bulk mailing privileges.

POST OFFICE

Is

More Than a Game



Those reports . . . those invoices . . . those notices . . . do they have to get into the mail tonight? If they aren't that urgent, you can do your local postmaster and his employees a great favor by bringing them to the post office during slack hours, earlier in the day.

Sure, postal employees are busy most of the time but, as the chart on page 40 shows, there are hours when they are really up-to-their-necks in work. So, if you can avoid these rush periods with your non-priority first-class mail, you'll help all the mail get there faster, including your own.

That's what volume mailers of third-class mail have been doing for years. They check with the U.S. Post Office Department weeks in advance and schedule their mailings to avoid rush days and hours. Then they "package" the mail so the post office can handle it with a minimum of labor and expense. They sort it all according to states and towns and, wherever possible, by zones. They tie it in bundles and put it in sacks, all properly tagged by destination. Then they deliver it right to the post office for postal employees to handle only when they aren't busy with other,

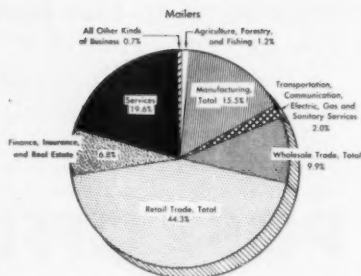
priority classes of mail. That's how third-class mail has come to be known as "deferred" mail, and why it goes at a lower rate.

All third-class mail is easily identifiable as such and can therefore be readily set aside for handling during slack periods. It is, however, impossible for postal clerks to examine first-class mail and determine which pieces are urgent and deliver them to the post office during slack hours. So, if you want to help speed up the postal service and avoid delays, follow the chart above!

Who Uses Direct Mail?

Recently announced results of an extensive survey conducted by the U.S. Department of Commerce reveal that almost half of the firms from which the consumer receives bulk third-class mail are local retailers. These are the food, clothing, furniture, camera, sports, and drug stores, automobile dealers, and other types of neighborhood shops with which we all do business.

Bulk third-class mail, which is one of the most important types of direct mail, makes it possible for these small businesses to keep their customers informed about new stocks of merchandise, sales, and other items of interest, even though their advertising budgets are



SOURCE: U. S. Department of Commerce

Prepared by: U. S. Department of Commerce, Business and Defense Services Administration, Printing and Publishing Industries Division



very limited. They can afford to use this medium of communication because it is non-priority mail—mail that is handled by the post office only during slack hours—and there-

fore goes at a lower rate. With bulk third-class mail, these retailers can also pinpoint their efforts and cover only those areas of a community where most of their customers reside.

The next largest category of bulk third-class mail users, according to the survey, is the service type of business. This includes local dry-cleaning es-

tablishments, garages, travel agencies, repair shops, motels, movie houses, and other sorts of services that most of us use at one time or another. Together, the retail and service firms comprise two-thirds of the commercial users of bulk third-class mail, demonstrating how vital this medium is to the operation of small businesses.

Long Distance Beaming

An experimental version of a new telemetry system has been completed that is expected to be able to beam signals through space about three times as far as any telemetry system yet flown. This comparison includes Pioneer V, the U.S. solar satellite which last year exceeded all records by sending signals to Earth from millions of miles out.

The telemetry system is one of a family of communication systems called Synchrolink that will transmit data the same distance as systems now in use at about one-tenth the power requirements.



Telephone Talk Via Moon

The voices of two U.S. senators were received in Schenectady, N. Y., recently in a half-million-mile telephone conversation by way of the moon.

The message took just two-and-one-half seconds to reach the moon, be picked up here by a General Electric Company observatory and transmitted to Seattle, Wash.

It was received by the Company's General Engineering Laboratory, which operates a tracking station and radio-optical observatory in the Rotterdam hills just outside Schenectady.



Imagination is more important than knowledge.

—ALBERT EINSTEIN

The Office Manager: **Technologically Displaced**

C. Edward Weber

The extensive changes which are taking place in information technology may have a profound impact on the practice of management. One of the first areas to be affected may be office management because the job content of the office manager is rooted in the old technology. I will suggest the probable impact on the office manager in light of ideas on organization and data processing which have recently been developed.

The essential functions of office management are likely to remain the same under the new information technology, but the functions may be performed in a different context, and the job of office manager may be radically modified. The question is, perhaps, not whether the present job of office manager is to be displaced by the new information technology, but what new

jobs are to replace the present one.

The first applications of the new information technology were in electronic data processing. This may be responsible for the misunderstanding that the impact would be confined to clerical workers. It is correct that the present applications have had their major effect on clerical workers. The available evidence suggests that clerical employment and the level of clerical skills may increase or decrease. The direction of change depends upon the kind of data processing which is mechanized, and there is no one-to-one relation connecting electronic data processing and clerical employment and skills. The immediate effect on the practice of management has been negligible although I believe traces of the future influence of in-

formation technology are observable; especially as it concerns the office manager. The current applications, however, are not a good test of what changes to expect.

Electronic data processing is only one part of the new technology. The fundamental idea of the new technology is a way of viewing decision-making. The electronic and related equipment is important because it makes the application of this viewpoint feasible. The new information technology views the production, marketing, and other company decisions as a network of composite decisions of many individuals. Decisions are considered apart from the individuals who make them; and an analysis is made of the routine and non-routine process of reaching a decision and of the integration or linkage among decisions. Effective decision-making is viewed as a rational process of searching for information and evaluating information.

Two of the implications of this approach for the practice of management are first that many management decisions can be routinized to the point where they are made automatically within the electronic system and secondly that the decisions can be more effectively integrated. Decisions can be ordered in the

most efficient sequence, and the initiation and flow of information can be designed to minimize duplication, and to reach the decision point at the appropriate time. Accordingly, the focus of information technology is on the design of more efficient methods of decision-making and information processing. So far, much of the theoretical work has been on the production function; but it is surprising how many management decision areas can be viewed within this context.

Traditionally, a primary function of the office manager is the design of office procedures; but a trend may exist to transfer control over data processing or office procedures from office managers to a central group. The trend is not directly related to the new information technology but arises out of the problems of duplication, needless reporting, and the inaccessibility of information. Considerable freedom remains, however, on the extent of centralization under the present technology; but central control is probably essential under the new technology. In the first place, the new technology requires a close integration of decisions and infor-

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mation flow among the various departments to achieve its benefits. This can only be accomplished with central authority and accountability. Secondly designing systems and procedures requires specialized knowledge in such areas as decision theory, operations research, and electronic programming. Thirdly, the systems group can pay for itself, perhaps only if it has wide jurisdiction.

For the above reasons, I submit that the new information technology will be associated with a division of the functions of office management into two separate managerial activities. There will be those persons specializing in systems and procedures and those specializing in the direction or supervision of clerical personnel. The two kinds of work will require different knowledge and skills and I would hazard the guess that there will be little mobility between the two kinds of positions after the present office managerial personnel have made the transition.

The character of clerical supervision is likely to change. Under the present arrangement, clerical personnel frequently have wide discretion over their work, and it is difficult to measure clerical performance. Accordingly, the stress in supervision should be on "motivat-

ing" clerical personnel to be efficient. Under the new technology, discretion and decision-making by clerical personnel may be minimized, and clerical work may be designed in great detail by the systems group. Accordingly, the stress in supervision may be on control, on insuring that the work is performed as specified. If the altered situation contributes to clerical unionization, then supervision has the added function of grievance handling. In general, clerical supervision may become more similar to semi-skilled factory supervision.

Aside from the increase due to company growth, the number of managerial jobs in the future may exceed present jobs. That is the combined number of managerial staff in systems and procedures and clerical supervisors under the new information technology may be greater than office managerial personnel under present technology. Certainly, the number of managerial personnel in system and procedures can be expected to undergo a substantial increase. Much of their work involves searching for and developing new methods, and such work absorbs many man-hours. Clerical personnel may or may not decline in number, but I doubt that the number of clerical supervisors will decline. There has been a

long term rise in the number of "chiefs" in proportion to "Indians," and this trend is likely to hold in clerical supervision as it has held in other areas of management.

The transition to the new technology may be associated with extensive organizational readjustment. I suggested earlier that designing of decision and information systems and procedures may be centralized. This group may report to top management and may have subordinate staff groups assigned to the various functional or regional subdivisions of a company. Many of the large clerical departments may be replaced by an electronic data processing system. There appears to be flexibility in the way in which clerical workers associated with an electronic system can be organized. One way is to have

small clerical centers strategically located at the points where information is generated or received and where decisions are communicated. Under this arrangement, clerical supervision would be assigned to small scattered groups, and each group would report to the department in which it is located rather than to a central group.

The new information technology, I believe, offers great opportunities for office management. The decision tools which are being developed may make possible a much greater contribution on the part of those concerned with information processing. The traditional office manager may be displaced in the large organization, but he is not being displaced by machines but by a vast army of experts, executives, committee chairmen, and clerical supervisors.

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Compact Compacts

The most compact automobiles in the United States are never seen in showrooms. Even if you glimpsed one in a steel plant you wouldn't recognize it as a motor vehicle.

These compacts are autos which have been compressed into bundles, to be put into steelmaking furnaces.

In one hour, a giant press in Chicago produces 30 bundles from 30 old, stripped autos. Each bundle is 5 x 2 feet in size. Big presses operate in many scrap dealers' yards.

Act on Fact

by James M. Black



Jack Mapes was suspended for 30 days on the charge of insubordination. Here is how it happened.

Mapes, a member of a work gang, was directed by an assistant foreman to do a certain assignment. He refused, saying the job was unsafe. So did the other employees; in fact, Mapes served as their spokesman in refusing to carry out orders. The assistant foreman asked Mapes to come with him to the department supervisor. When the latter attempted to interrogate the employee he got nowhere.

"I'll not answer questions unless a union representative is present," was Mapes' firm reply.

"You have a right to representation," said the supervisor, "when a grievance exists. But there is no grievance. I'm simply trying to get the facts."

Mapes was adamant. "I won't

talk until I'm properly represented," he insisted.

The supervisor, patience exhausted, applied discipline—a 30-day lay-off for insubordination.

Arguments at Arbitration

The case came to an arbitrator and the union offered this defense.

"Proper cause did not exist for this suspension. Representation was not allowed. The grievant was not even permitted to confront his accuser privately as he requested. The cards were stacked against him in a 'kangaroo court.'"

"True, the company has always denied the right of representation when an employee was being questioned about work performance. We could never before bring the issue to arbitration because management never imposed a punishment lay-off on anyone as the result of such interrogations.

But we did not acquiesce in the practice.

"The men had good reason to refuse to work. The work order was not countersigned even though work was to be done under extremely gassy conditions. No gas tests were made, no notations were shown of safety precautions. Mapes was the spokesman for the group—presenting a grievance. The contract says an employee, or a group of employees, has the right to present a grievance orally or in writing, individually or through a chosen representative, to his immediate foreman. For voicing the grievance of the group Mapes was singled out for discriminatory punishment. He is the first man to be disciplined for refusing to talk without union representation. Mapes was asked to testify before two supervisors without a witness of his own. His refusal was justified. His grievance should be sustained and he should be made whole for his wage losses."

The company answered, "Management has the right to question an employee privately about job performance unless it has bargained away that right. This we have never done, although the union has raised the issue repeatedly in collective bargaining. At the time of

the questioning no grievance existed. The department supervisor was simply trying to get the facts. A grievance cannot be raised until management has taken action on the basis of which an employee can initiate the grievance procedure. Mapes was disciplined for his refusal to answer his superior's questions about his job performance. The fact that he had previously refused to obey the assistant foreman's instructions has no bearing on the case. Because he was insubordinate to the department supervisor, he was punished. The penalty was proper, the grievance should be dismissed."

Ruling of Arbitrator

The arbitrator ruled, "The union's argument that management was unfair to deny Mapes representation carries weight. Management, however, can respond on the grounds of equity. It has the right to manage its operations with maximum efficiency. Three main arguments bolster the company position: (1) The existence of relief through the grievance procedure; (2) The common law rights of management; (3) The contractual rights of management.

"Regarding the first, if an employee's testimony before

his supervisor is distorted so as to hurt his interests, he is entitled to union representation. However, the employee had the opportunity through the grievance procedure to correct any such distortions that may have occurred had he chosen to answer questions. Therefore it may seem that Mapes was wrong in not answering.

"Management claims the right under common law to question and discipline employees without union representation unless that right has been bargained away. It further states that if the employee is dissatisfied with management action he may seek redress through the grievance procedure. The proposition has wide acceptance. However, the union maintains that the 'proper cause' qualification has an overriding effect upon this common law power of management, negating it in the present instance.

"I do not think this case turns on common law. If no grievance existed before Mapes' suspension, the denial of witnesses to the grievant was not unreasonable, did not violate 'proper cause.' Management had never granted workers the right to union representation when supervisors were questioning

them about their work performance. However, I agree with the union's argument that a grievance did exist before the interrogation of Mapes by the department supervisor. The interrogation itself had its roots in a work incident about which Mapes orally complained. As spokesman for his group he entered the grievance according to the terms of the contract. He says he had the right to do so because a matter of safety was involved—and that this factor negated the 'obey now, grieve later' theory of employee behavior.

"The company states that it has consistently refused to agree to a contract clause saying that 'No employee shall be required to do work which will unreasonably endanger his physical safety.' The reason: This would leave the determination of safe working conditions to employees, not supervisors. Had the supervisor discharged the men for insubordination at the time they refused to carry out his orders, and let the 'safety' issue be decided on its own merits, his method of handling the situation would have been much sounder. It would have then been up to employees to prove that the work situation was indeed unsafe. But this was not done. So

the 'safety' issue is irrelevant. Therefore I must conclude that 'proper cause' did not exist in the disciplining of the grievant when other employees who took the same stand received no punishment at all.

"The company's attempt to disassociate the incident of insubordination when Mapes refused to carry out a work assignment, and the incident of his refusal to answer questions concerning his offense, do not hold water. One act grew out of the other. Therefore it is my ruling that this grievance be sustained, and that the employee be made whole for his lost wages. The penalty shall be wiped from his record."

A Look at the Whole Picture

A tricky case, isn't it? It boils down to one question: When is a grievance not a grievance?

Unless a union contract is very rigid, a supervisor has the right to question an employee about his work performance without union interference. If, as a result of that questioning, improper discipline is invoked, the employee can seek remedy through the grievance procedure. Furthermore, an employee who refuses to obey his supervisor's orders, even if he thinks they are unfair, exposes himself to the charge of insub-

ordination, and it is up to him to prove that his action was justified.

Apparently the assistant foreman did not know that under the terms of the contract Mapes was presenting an official grievance. Or, if he did, he did not consider that he had the authority to receive it, or to order Mapes and his associates to obey his instructions or face immediate discipline.

The department supervisor, in line with good management practice, tried to get Mapes to tell his side of the story. Evidently his first inclination was not to treat the situation as a case of insubordination. If he had, he would have told Mapes to go back to work, obey orders or face the consequences. But when Mapes declined to answer his questions without union representation the dispute became personal. The other members of the work gang, also insubordinate, were forgotten.

The department supervisor disciplined Mapes for insubordination, not because he refused to carry out the assistant foreman's instructions, but because he would not reply to interrogation unless a union officer were present. He evidently reasoned that he had the right under the contract to question Mapes about his work.

But was he questioning the employee about job performance? Or was he interrogating him about a grievance? If the latter, Mapes was quite correct to insist that he had the right to representation.

The department supervisor made one basic mistake. He sought to separate one incident in a series of events from the whole, and to base his decision on the facts of that incident. The alert supervisor, conscious of his labor relations responsi-

bilities, understands that in problems involving employee discipline it is essential to keep the total picture in view. When one segment of a complicated discipline dispute is isolated from the whole, and action taken on that basis, an employee is likely to make stick his allegation that the penalty he received was unfair and discriminatory, regardless of the fact that the supervisor may have been morally right in acting as he did.

This case appeared in the Labor Relations Reporter. It has been altered somewhat to illustrate certain principles of supervision. All names are fictitious.

Manage

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Creativity

in an

R & D ORGANIZATION

Dr. Starr, president of Atomics International, a division of North American Aviation, Inc., gave this address at the Ninth Western Training Conference in Los Angeles.

The highly industrialized nations of the world are today in the midst of a new technological revolution whose effect will be as great or greater than that of the industrial revolutions of the past. This modern technological revolution is the result of a calculated effort to accelerate the creation of technological products by means of an intensive effort in research and development.

Such a concept of forced technological growth is the result of the stimulating discovery made during World War II that organized large groups of scientists and engineers could reduce the time required

from scientific discovery to useful application of a tremendous variety of new technical devices. In fact, technical progress which had previously required decades could, by this organized effort, be reduced to a few years.

As a result of this interesting management discovery, the postwar era has given rise to a large number of major research and development organizations whose primary function is the creation of new technological devices extracted from the broad resources of pure science.

As an indication of this intensive growth in research and development, we can compare our present national activities with those of the early 1900s. We have today about 700,000 engineers and scientists in the United States, as compared with about 2000 at the time of Edison. Of this number, today

ABOUT THE AUTHOR

Besides heading up *Atomics International*, Dr. Starr is also a vice president of *North American*. He holds an electrical engineering degree in a Ph.D. in physics from *Rensselaer Polytechnic Institute*, Troy, N. Y. During World War II he conducted research for the government. He joined *North American* shortly after the war. He is a member of numerous scientific organizations. Dr. Starr was appointed by California Governor Edmund G. Brown to the State's 10-member advisory council on atomic energy development and radiation protection.



there are between 5000 and 50,000 technical managers as compared with about 1/100 of this number in the early 1900s. During the coming decade, it has been estimated that close to \$200 billion will be spent in this country on technological research and development of all types, which will require a doubling of our present level of effort.

Atomics International, the organization of which I am president, represents such a postwar development, and is typical of the research and development organizations of the new era. Although it is a division of a major corporation, *North American Aviation*, it is a self-sufficient, semi-autono-

mous, operating entity consisting of over 2000 employees, of whom over half are technical personnel. Approximately 1000 are engineers or the equivalent; 260 have masters degrees, and over 100 have doctors degrees.

The fields of work run the gamut from pure science, through applied science, engineering development, product manufacturing, and field construction. The physical facilities support research and development in all branches of physics, chemistry and engineering. Although in our case, the main concentration of effort is in the atomic energy field, this organization could work effectively in practically any field of technology.

With this general background, and the operation of Atomics International as an experience laboratory, it is of interest to examine both the management and personnel characteristics of this type of research and development organization.

Broad Objectives

Let us first consider the broad objectives and functional behavior of such a group. Its principal over-all objective is creative technological accomplishment. While all the usual corporate measures of profit, unit costs, labor turnover, sales growth, and the like can be applied in some degree to this type of organization, these are chiefly indicators and quantitative measures, rather than basic motivating objectives.

Because of the nature of technological research, most discoveries, ideas, and inventions are first created at the lower professional levels of the organization. These creative thoughts must then be fed up through the organization to the top policy-making group. In the process of moving up, they are evaluated, amplified, or reduced in importance, supported or stifled. Once the new idea reaches the top management level, a decision to implement the idea results in a flow of directed effort from the top of

the organization down through the various supervisory echelons back to the working level.

As descriptive of this process, I look upon the upward flow of information to the top management as the communication of "strategy," and the downward flow to the implementation level as the communication of "tactics." A fuller discussion of this circulation of information in research and development organizations is probably more appropriate for another occasion. The principal point I wish to emphasize now is the essential nature of the upward flow of captive ideas for the success of this type of organization.

Let us now examine the type of personnel involved in a research and development group of this type. They cover a spectrum of personalities and a spectrum of motivations. For simplicity of discussion, we can divide them into three groups, the scientists, the engineers, and the administrators. Functionally, the scientists are basically involved in the discovery of new information; that is, the exploration of the unknowns of nature. The engineers are primarily concerned with the application of this information to the development and production of working devices.

The administrators are con-

cerned with the financial management and the orderly procedures for maintaining workable functional relations in a large group. In the case of a principal government contractor, such as Atomics International, the administrators have an additional important function of matching the procedures of the organization with the enormous body of government requirements relating to such procedures.

Superficially, one might consider this oversimplified sequence of scientist-engineer-administrator as also being the descending sequence of desirable creativity. I do not believe this to be so. It is our experience that the success of the organization depends almost equally on all three groups and that creativity is required from all of these groups, although of a different nature in each case. It is perfectly possible through unimaginative engineering to destroy the usefulness of the most portentous scientific discovery. It is possible, through overbearing or injudicious administrative controls, to stifle the productivity of a technological organization. For this reason, it is my opinion that creative thinking is essential in all three aspects of the organization in order to insure its success.

Motivations

Let us consider the principal motivations which one finds in these three groups of people. The scientist, as a type, is much more professionally oriented than he is organizationally oriented. The scientist places a very high value on his prestige status, both nationally and internationally, in relation to his professional colleagues in the same field. He is apt to put less emphasis upon his status in the organization, although for secondary reasons this may also be important to him.

This is not so much a matter of loyalty as it is the fact that the scientist is fundamentally being asked to make a basic contribution in new areas of technology. He therefore reasonably believes that such contributions are better evaluated by professional colleagues in a position to recognize their true merit, than by management or business specialists who lack professional sophistication in their fields.

The engineer is less professionally oriented and more organizationally oriented than the scientist. Although he also wants status recognition by his professional colleagues, he believes that even the management organization can judge the merits of his accomplishments properly—in view of the

fact that his end-products are associated with measurable financial returns to the organization.

The administrator is the most organizationally oriented and the least professionally oriented. This is primarily the result of the fact that the product of the administrator's effort is rarely made public and is therefore evaluated only by the internal members of the organization. For this reason, the administrator generally looks to the organization for his principal recognition rewards.

Top Management

To complete this broad picture of the research and development organization, we must consider the principal functions of the top management. There are, of course, the tactical aspects of organization management, with which you are very familiar, and which represent the major bulk of organized educational and training efforts in the management field. There are in addition, however, the strategic responsibilities of top management, which unfortunately are only rarely discussed and are, in my opinion, inadequately considered in management training programs.

What are the principal strategy responsibilities? These

are in the area popularly called "business decisions." They are usually qualitative in nature and involve broad value judgments which depend upon the breadth of experience, the depth of perception, the imagination, and the personal character of the individuals in the top management group. Among the strategic areas of top management action are setting business objectives, evaluating risk ventures, discovering problems (both in and out of the organization) before they become crises, setting priorities on efforts, appraising results of programs, and planning future courses of action.

It is characteristic of this type of problem that many of the elements of the problem are either unknown or uncertain; that most of the applicable experience cannot be accurately formulated and is only qualitative in nature; that the features of the problem are complex, elusive, and subtle. Imagination and creative thinking by the top management group is essential for the proper solution of these strategic problems. Such capabilities in strategic decision making are the essence of leadership. Without it the most superlatively creative working level cannot contribute to the over-all performance of the group.

This, then, represents the total picture of the organization, somewhat simplified. Nevertheless, it highlights one of the key problems of the organization; namely, the production of creativity throughout.

I have emphasized the necessity for creative technical thinking at the lowest professional levels. I have indicated the need for creativity in the three principal groups, scientists, engineers, and administrators. Finally, I have indicated the significance of creative strategy decision making on the part of top management.

Obviously, if creativity were a simple thing to produce, no organization would lack this element, and it would not be a serious problem. Our basic difficulty is that the very nature of the conventional organization contains elements which oppose the creative functioning of the individuals within it.

Team Effort

Let us consider this conflict. Organization is, by its very nature, a team operation in which the freedoms, scope of activity, and scope of information of the individual are limited, monitored, and controlled. The elementary concept of organization is one of focusing the individual's effort

in a specific direction, which then meshes with the efforts of other individuals in some pre-planned manner to produce an over-all accomplishment.

Creativity, on the other hand, is an individual function. It is the result of an imaginative individual seeing concepts and sensing subtle parameters which are not easily observable to the organization around him, or in fact may not even be understood by others. In its original conception, a creative idea may be weak, unbalanced, and unable to withstand criticism or detailed evaluation, but nevertheless may be a potentially valuable idea.

Put simply, how does one create mental "elbow room" for creative ideas; how does one keep the strategy channel open for the idea to move and grow within the organization and eventually receive top management support; how does one create an atmosphere of encouragement for new ideas; how does one stimulate the members of an organization to both the value of new ideas and their responsibility to create them?

The problem might be reduced to one of organizational environment and motivation of the individual. With reference to the environment, it is evident that a tightly controlled

conventional organization will not provide a fertile environment for creative thinking. In such an organization, there is apt to be a negative attitude toward the time-consuming nuisance aspects of a new idea.

Limited Objectives

Further, the immediate objectives of the organizational unit in which the individual resides may be so limited that the unit has neither awareness of nor consideration for the objectives of the organization, and so tends to denigrate the values of most new ideas. The individual is rarely given either the time or freedom from other responsibilities which might be required to explore a creative thought.

The motivation of the individual in an organization for creative thinking is a much more subtle problem. There must exist some stimulation to motivate the individual. He must be aware of the broad management objectives of the organization, as distinct from his more narrow individual routine responsibilities. He must be encouraged and given support when a creative idea develops so that he can at least carry it beyond the germination stage sufficiently to permit evaluation. He must somehow get organizational recognition

for his creative attempts, even though these attempts are not completely successful every time. He must feel that he has the privilege of making a few mistakes in return for some occasional successes. And perhaps most important of all, it must be recognized that even the best of new ideas must overcome obstacles. Aside from the many obstacles of nature which a new idea must face, there are also the obstacles of organizational inertia, unimaginative evaluations, and conservative business policies. The individual effort and emotional dedication of the creator are needed to drive through these obstacles.

Unfortunately, by its very nature, a large organization must put boundaries on the freedom of its members, and these inherently conflict with the problem in both human and organizational relationships. These relationships in a research and development organization can put amazing strains on the management.

The most creative professional specialists are apt to be extremely parochial in their judgments. They espouse a set of professional ideals which are likely to omit consideration of the practical constraints of both their organization and society generally. They have very

little patience with executive decisions which do not conform to their idealistic views, and yet the organizational nuisance which this attitude on their part produces must be tolerated and deftly handled in order to maintain the creative vitality of the group.

Personal Differences

Of course, even in the best of environments not all individuals are equally creative. Some individuals with the basic qualifications just do not know how to bring to bear their particular talents for creative purposes. This is a process which I believe can be taught, in the same way that one can teach the approaches that can be taken for decision making. It has been suggested that perhaps such creative thinking can come only from a selected

group of individuals. Recognizing the variations in individual capabilities, one must recognize the variations in the type of areas where creative thinking is useful. I am not aware of any selection process, other than direct participation, which can pre-select the optimum combinations of individual and areas of contribution. Intelligence is about the only basic requirement of which I am aware.

I do believe therefore that creative thinking is a vital field of training development. It not only plays a valuable role in business generally, but is an essential ingredient in the operation of the national research and development effort which will become a principal factor in our civilization in the coming generations.

How Much That Drip Can Cost

When the Industrial Engineering College of Chicago moved into a new building, President Godfrey H. Kurtz, discovered a faucet that constantly leaked hot water. To place a price tag on the waste, the president gave the problem to students in one of his classes. Here's what they found.

Hot water was being lost at the rate of a gallon every 1.8 minutes or 288,900 a year from this badly leaking faucet. Through other calculations, they found that it took six tons of coal per year to heat the water.

The six tons of coal cost \$75.50, and water 22 cents per 1,000 gallons, or \$63.50 for the year. The total cost of the leaking faucet came to \$139.00. All it took to repair the leak was a two-cent washer and fifteen minutes of the janitor's time.

An Adventure of the Mind

Managers must understand science if they are to make sensible decisions in this technological era

Sputnik, three years ago, made the United States aware of the lack of and need for science education. Many measures have been taken to improve science education and secondary education in general. More remains to be done, and already some reaction against this improvement is setting in.

Our first impulse was to compete with Russia in the military field and in propaganda. These are important, and remain so, even more after Khrushchev's UN appearance. Technology is dominant in military matters, and we need more and better scientists and engineers for this. Russia trains much larger numbers than we do, and probably about as well.

However, this is a purely negative approach, and the wrong reason even for technology, let alone science. The

good life created by technology means not only TV, cars, jet planes and washing machines, but also the elimination of toil, and production of all our food by 10 per cent of population. Materialistic? Not entirely—freedom from want means you can employ your time and mind for better, more spiritual things than getting your daily bread.

But technology is not science, it is only created by science. Science is an adventure of the mind. It is the field of human mental activity which has made by far the greatest advances in the past 100 (also 300) years. It is not only mastery but also understanding of nature, quite undreamed of by the ancients, though they were interested in understanding nature, or by men in the Middle Ages. The turn of science in the last 60 years, entirely unexpected by

earlier science, has been away from "materialism," often contradicting our sense impressions. Very exciting to the scientists, and only most vaguely guessed by even the educated layman, science is the essence of today's culture, as painting and other fine arts were of the Renaissance, or political thought of the 18th century. It is most regrettable that the public does not participate in this adventure and is essentially illiterate in science.

We need science education to produce scientists, but we need it equally to create literacy in the public. Man has a fundamental urge to comprehend the world about him, and science gives today the only world picture which we can consider as valid. It gives an understanding of the inside of the atom and of the whole universe, of the peculiar properties of the chemical substances and of the manner in which genes duplicate in biology. An educated layman can of course not contribute to science but can enjoy and participate in many scientific discoveries which are constantly made. Such participation was quite common in the 19th century but has unhappily declined. Literacy in science will enrich a person's life.

Science for the educated layman is also a practical necessity.

In business and politics, and also in daily life, he will often have to make some decisions involving scientific and technological matters. A person who understands what scientists talk about can form his own judgment and will not be over-awed by crackpots who promise the sky. People should not close their minds by saying: "This is science so I can't understand it."

What do we need in the secondary schools? Briefly: The students who do not intend to be scientists should learn science; the future scientists need not. Why this paradox? To give the needed, thorough and exact foundations in science for future scientists is beyond the capacity of most of the present high school teachers. Improvements are desirable but will take a long time, 10-20 years even if the need is recognized and with the best program and salary incentives. College must do the training of future scientists in science. But it is possible in high school to show that science is exciting, what its methods are, and some of the

This is a condensation of an address by Dr. Hans A. Bethe, professor of physics at Cornell University, presented before the New York State Citizens Committee for the Public Schools in Rochester, N. Y.

world picture it has created. This can give the future non-scientist the basic knowledge he needs, and also will get young students interested in science study. The best example of this is the Physical Science Study Committee course in physics. Similar courses should be made in biology and chemistry. The future scientist should also take PSSC to whet his appetite, but no more.

Instead, he should have mathematics preparation. Every future scientist should leave high school with a year of calculus; Germany and England give two! Algebra and trigonometry should be as obvious to him as the multiplication table. I am old-fashioned about the mathematics program; I want mathematics as a tool, not for itself. Mathematics can be taught in

high school because its vital parts have, contrary to science, not changed in the last 100 years. Mathematics is also useful for non-scientists, to learn pure reasoning and also direct applications.

An early start in mathematics is needed. The first three years could go at about twice the present pace and would probably produce better understanding, not less. Europe teaches it in elementary school. Algebra should be started in seventh grade for the better students, in eighth for the average. Similarly, there should be an early start of interest in science.

Don't neglect languages—they should come early in the student's life. The need for balanced education is more intensive in all subjects than five years ago.

Symbol in Steel

The symbol of the 1964 World's Fair in New York's Flushing Meadow is to be a huge open-work globe of stainless steel, called a Unisphere.

The globe will be formed from narrow sections of steel representing lines of latitude and longitude. On that spherical lattice, the continents and large islands, cut from stainless wire mesh, will be superimposed.

The Unisphere will be 120 feet in diameter, about 13 stories high. Present plans call for it to be mounted in a 12-cornered fountain-pool, with a stainless steel sign of the zodiac sculptured in each corner. The Unisphere is to be located at the site of the trylon and perisphere from the 1939 World's Fair.

Eye on Washington

by Michael S. Roberts



NUCLEAR TESTING USED

The Red decision to resume testing of nuclear weapons, including a massive 100 megaton (equal to 100 million tons of TNT) bomb, is the tactic of power politics. And there are other reasons behind it as well, which also bode ill for the free world.

President Kennedy aptly described the Communist decision to resume nuclear weapons testing as "a form of atomic blackmail, designed to substitute terror for reason." The Soviet leader isn't missing any bets in his efforts to turn the screws down tight on the Western alliance and keep world tensions as taut as possible.

In the case of the bomb test decision, after nearly a three-year recess, the Kremlin had another problem. The word had leaked out some months earlier that the old Stalinist forces within Russia who favor every means short of nuclear war to beat the West were gaining strength against Khrushchev's attempts to win the world struggle by economic and political means.

In addition, the Chinese Reds, who hang to the Russian Communists by only the most tenuous of philosophical ties, had made significant progress developing their own nuclear weapons. They will

soon be able to test them, it is believed, and pose a threat to Russia which Kremlin bosses know is even more serious than that posed by the West if allowed to get out of hand.

BERLINERS TENSE, NOT PANICKED

These old-world-type power politics are better understood by the Europeans than by those of us who are isolated from centuries of similar back-and-forth grabs.

The people of West Berlin, according to Americans returning from military or business tours there, are confident that the smouldering fires will not turn into a conflagration.

They are not as confident that they will be spared eventually from Red domination. But to leave is unthinkable, as it has always been to people living on the borders of the cold war.

They believe that as long as the minor border incidents—the escapes and the near escapes, the water cannon and delayed U.S. citizens—continue, tensions will be eased, and the big flareup which could lead to all-out war will not occur. The conference tables and the fist shaking will take the place of the rockets and bombs.

CRASH U. S. MILITARY BUILDUP

The big military buildup, resulting from the Berlin crisis and the deteriorating world situation in general, will begin to be felt by industry this month.

The Defense Department will spend almost \$4 billion more for military procurement in the next nine months than it did in the past twelve months. Military buyers will put out \$18.4 billion for more tanks, guns, electronic equipment, rifles, ammunition, blankets, food, and missiles between now and next June 30.

Size of some of these procurement increases are phenomenal. The big boosts are surprisingly in the more conventional weapons—tanks, aircraft, trucks, ammunition, and food. Many of the items will be purchased in the largest quantities since the end of Korea.

Reason is preparation for the limited war—and outfitting the more than 200,000 reservists called to active duty who didn't need these supplies when they were "weekend warriors."

Military buildup won't stop with this year's \$18.4 billion in procurement. Military and budget chiefs are already drafting next year's increase, and the one after that will be even larger if things continue as they're going now.

MANAGEMENT'S STAKE

Management, particularly production engineers, foremen and supervisors, will be on the defense buildup firing line.

The Berlin crisis is coming to a head now—the military wants its material "yesterday" or as soon thereafter as it can get it. Military contractors, and firms which get their first military contracts now, are going to be expected to maintain peak production efficiency. These are "urgent" buying orders the Pentagon is awarding.

Gage your future in this military buildup—and your responsibility as management—by these expected military buying patterns:

In general: Aircraft, \$6.2 billion; missiles, \$4.3 billion; ships, \$2.6 billion; other ordnance, \$1.9 billion; other electronics, \$1.5 billion, plus \$1.9 billion in other procurement.

First thing the military needs is the food, clothing, and spare parts which can be delivered quickly to arm the new military manpower. Food

and textile industries will feel the first and biggest impact of this new defense spending splurge.

Specifically, here are some samples of how this buildup will affect industry:

Machine tool buying will jump to \$100 million from \$44 million last year as the military adds 4500 new machines.

Automotive buying will skyrocket. Army alone will spend \$398 million for combat vehicles, \$140 million more than last year, and \$343 million for tactical and support vehicles, \$155 million more than last year.

Ammunition and small arms spending will be almost doubled over what was planned earlier this year, up from \$280 million to \$440 million.

Ship construction in private yards will total \$1.7 billion, with the rest of the \$2.6 billion total going to Navy shipyards. It will provide for 52 new ships and 22 overhauls.

One offshoot of the defense production surge will be more intense labor problems for management. It will be management's job to impart a sense of war-like urgency to all workers in what will still be peacetime. It'll mean averting labor problems without sacrificing production, time, or what may be slim profit ratios.

In all, the outlook is for a long period of pitching in up to the elbows for management at all levels.

Seminar Notebook

The National Management Association's next Management Unity Seminar will be held in Dayton, Ohio, during the week of October 1 through 6. The next four will be:

December 3-8, 1961

February 11-16, 1962

April 1-6, 1962

June 3-8, 1962

NMA'S 1961 ANNUAL

the program . . .

Wednesday, October 25

(Starts at 1:00 P.M. for members and delegates)

Afternoon—Zone meetings, annual meeting, reports, board of directors meeting, and election of national officers

Evening—Social Hour.

Thursday, October 26

Morning—General Assembly, Welcome, Keynote Address.

Presidents Luncheon

Featured speaker, presentation to Free
Enterprise Writer of the Year

Afternoon—IDEA FAIR

Evening—Special NMA Program

Friday, October 27

(Special Early Bird Film)

Morning—Management Development Conferences,
(each repeated twice)

Awards Luncheon

Presentation to Management Man of the Year

Afternoon—General Assembly featuring Highlight speaker.

Special Events Note: Night club tours have been arranged by Special Events Committee for Wednesday and Friday nights. Special arrangements can be made, by request, for industrial tours, sight-seeing tours, and for tickets to stage shows.

UAL CONVENTION

... the people

Featured Speakers



Keynoter Maj. Gen. J. B. Medaris, U.S.A. (Ret.), and president of the Lionel Corp. New Dimensions in Management Responsibility.



Arthur "Red" Motley, president and publisher of Parade Publications. Management's Political and Social Responsibility, in depth.

Awards



John Mihalic, President of Two Divisions of AVCO is NMA's Management Man of the Year



Tom Campbell, Editor-in-Chief IRON AGE is the Free Enterprise Writer of the Year.

Management Development Leaders



Dr. Arthur Secord, Professor of Speech, Brooklyn College.



Herbert S. True, Vice President, Visual Research, Inc.



Raymond N. Carlen, Vice President, J. T. Ryerson Co.



Max B. Skousen, Management Consultant.



The Effective Manager

"A good manager is a rational and responsible individual who obtains resources and then utilizes them with maximum efficiency. He takes an active and personal interest in programming and budgeting. He seeks the circumstances he feels necessary to accomplish his task; if he cannot find them, he creates them. He encourages innovation and energetically addresses himself to significant responsibilities of today and tomorrow, and the day after.

"The effective manager works, and thinks, and supervises. He delegates and deputizes; he 'follows up'; he checks on himself and his subordinates. He rewards and he disciplines. By his attitudes and his honesty, his loyalty and behavior, he generates confidence, motivates his people and creates esprit de corps.

"The mantle of leadership, the mantle of the manager-leader, is not easy to wear. There can be no milk-toast approach to management or leadership. Some loneliness is inevitably the leader's lot. The responsibility for the decision made by him or his subordinates is his alone.

"The manager is confronted with a veritable conglomeration of things, people and consideration. Time will never become available to him of its own volition . . . the effective manager makes it so. The successful manager concerns himself with the new, and with creative initiative.

"The manager does not succeed via education alone. Schooling and the process of learning are not enough. The effective manager must have imagination to innovate, the capacity for judgment, and the strength and inclination to persevere. He must think and ponder, discuss and listen, consider and frequently reconsider. He must decide and he must act.

"Intelligence is a prerequisite, brilliance a bonus. But dedication to cause, tenacity of purpose, and common sense in application are transcending."

—COL. W. W. CULP, U. S. ARMY MANAGEMENT SCHOOL

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